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Exploring relationships between societal engaging activities and research: evidences from a Spanish Public Research Organization

Abstract: Research topic, objectives and research questions

The shift towards the new social contract between science and society (Martin, 2003), in parallel with the criticism to the image that portraits some researchers in an 'ivory tower', have given an increasing relevance to establishing strong links between public research organizations and society. The traditional portfolio of researchers' activities (research projects, publications and teaching) has been expanded with other activities including societal dimensions of the research, such as knowledge transfer and exchange (KTE) (OCDE, 1996; OCDE, 1999, Mitton et al., 2007) and public engagement – popularization or dissemination activities – (Commission of European Communities, 2000; FECYT, 2003; Royal Society, 2006). In a context where researchers are asked to participate in a wider diversity of activities, little is known about how their participation in some of these activities can affect their performance on the others. Likewise, for managerial and policy purposes aimed at increasing research excellence and societal impact, it is crucial to know how this diverse activities are related and whether they could be complementary, substitutes or independent.

Previous researches have addressed the relationships between some of these scientific activities. Findings support that researchers' engagement in entrepreneurial activities coincide with an increase of academic publications (Van Looy et al., 2006), and that academic engagement is positively related to researchers' academic productivity (Gulbrandsen and Smeby, 2005; Bekkers and Bodas Freitas, 2008; D'Este and Perkmann 2011; Haeussler and Colyvas, 2011); although some studies alert that this positive relation only appears under certain conditions, when university-industry relationships are enough to provide complementary resources –cognitive, technical or financial – for research activities (Manjarrés-Henríquez et al., 2009). A study about researchers' portfolio of knowledge transfer activities find substitution effects between publications and teaching, whereas publications go 'hand-in-hand' with consultancy and informal knowledge transfer, being independent from spin off formation and granted patents (Landry et al., 2010).

Despite the importance of scientific culture within science policy strategies (Commission of European Communities, 2000), studies addressing researchers' engagement in dissemination activities and how this can be related to their engagement in other scientific activities has received less attention in the literature. An exception is the study conducted by Jensen et al. (2008) which concludes that researchers' that participate more in wider dissemination (popularization activities and industrial collaboration) perform better academically.

In this study, the portfolio of activities undertaken by researchers encompasses four scientific activities: academic research (hereafter publications), KTE and dissemination, and we differentiate between individual dissemination and institutional dissemination (Olmos-Peñuela et al., 2014). The aim of the paper is to analyse to what extent researchers from different fields are engaged in these four scientific activities and to explore what are the relationships between them and its determinants. In so doing, we address the following research questions: a) Do the patterns of engagement of researchers in diverse scientific activities differ across fields?; b) What are the relationships between these scientific activities? Are they complementary, substitute or independent?; c) What are the factors underlying the engagement in the different activities? and; d) What are the managerial and policy implications that can be derived from the study?

Data and methodology

The empirical analysis has been conducted on a population corresponding to 3,167 tenured researchers of the Spanish Council for Scientific Research (CSIC) belonging to the eight areas of knowledge in which the organisation is structured. Data collection took place between 7th April 2011 and 24th May 2011 and was gathered via an online questionnaire sent to the researchers. Respondents were asked about their personal and group characteristics, their previous experiences and their scientific activities including their involvement in KTE and dissemination. Additionally, information about researchers' publications has been obtained from the Thomson Reuters' ISI Web of Science. We have obtained a final sample of 1,285 permanent researchers corresponding to a net response rate of almost 41%.

We have conducted a multivariate path analysis allowing to simultaneously estimating four OLS regressions to explore the correlates of the dependent variables referring to the four researcher's activities considered in this study and to its determinants. As determinants of researchers' engagement in these activities, we have included variables related with organization assets, financial assets, career characteristics, motivations or knowledge attributes (Landry et al., 2010). Additionally, a one-way ANOVA (multiple-range test) is used to analyse whether there are differences across the research fields with regard to the involvement of the researchers in the four scientific activities considered.

Emerging results

The empirical results indicate the existence of complementarities between three of the four activities analyzed: individual dissemination, institutional dissemination, and KTE. This means that all the activities related with a wider societal engagement go 'hand-in-hand' since they are positively correlated. Conversely, academic research (i.e. publications) emerge as an activity which performance is independent from the other three activities, which indicates that to be engaged with society do not harm research performance (in terms of publications) neither it improve it. The way in which these activities relates points to the existence of two independent groups of activities: traditional research activities and activities involving any kind of societal engagement (KTE and dissemination). The regressions to be included in the final paper will provide insights about organizational and social mechanisms shaping the practices and scientific outputs of researchers. We can

anticipate that we find differences in the factors explaining researchers' participation for each of the different activities, being the research unit size the only variable positively related with a higher researchers' involvement in all the four types of scientific activities considered. Finally, the one-way ANOVA show differences across fields regarding researcher's engagement in each of the four activities (e.g. social sciences and humanities researchers are the highest ranked in individual dissemination and KTE whereas they are the lowest ranked in institutional dissemination and publications). This suggests the existence of different scientific and societal practices across researchers from different fields.

Our findings have implications at the managerial and policy levels, since a better understanding about the synergic effects between the researcher's portfolio of activities is necessary for the implementation of measures aimed at promoting both the research and societal engagement of researchers within their academic institutions.

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